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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/085,105	03/01/2002	Shun Hasegawa	0171-0827P	7258

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BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

ALEJANDRO, RAYMOND

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 10/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

10/085,105

Applicant(s)

HASEGAWA ET AL.

Examiner

Raymond Alejandro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 March 2002 .
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 7-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 March 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1 .
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____ .

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-6, drawn to a fuel cell separator, classified in class 429, subclass 34.
 - II. Claim 7, drawn to a method of manufacturing a fuel cell separator, classified in class 264, subclass 104.
 - III. Claims 8-9, drawn to a solid polymer fuel cell, classified in class 429, subclass 30.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product as claimed can be made by another and materially different process, for example, a process wherein the separator is not shaped at all or wherein no fibrous base material is added.
3. Inventions III and I are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the solid polymer fuel cell does not require the particular resin composite separator for generating power, that is, the fuel cell can use any other separator material such as

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metal or carbonaceous powder alone. The subcombination has separate utility such as providing a suitable conducting separating feature.

4. Inventions II and III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions have different modes of operation, different functions, or different effects, for example, the method is for manufacturing a separator feature while the fuel cell is a power generating apparatus.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

6. Because these inventions are distinct for the reasons given above and the search required for one group is not required for other groups, restriction for examination purposes as indicated is proper.

7. During a telephone conversation with Gerald Murphy on 06/13/03 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-6. Affirmation of this election must be made by applicant in replying to this Office action. Claims 7-9 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

8. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the

application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Priority

9. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

10. The information disclosure statement (IDS) submitted on 03/01/02 was considered by the examiner.

Drawings

11. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al 6242142 in view of the Japanese publication JP 11-256009.

The present application is directed to a fuel cell separator composition and separator itself wherein the disclosed inventive concept comprises the specific composite materials. Other limitations include the parts by weight; the channels and the specific resistivity and gas transmission rate.

With respect to claim 1:

Saito et al teach a separator for a polymer electrolyte fuel cell having, in at least one side, a groove for supply of an oxidizing or a fuel gas (ABSTRACT); wherein the separator is made of a carbon composite material comprising graphite powder, a thermosetting resin (ABSTRACT)

The present invention provides:

a separator for a polymer electrolyte fuel cell, interposed between the gas diffusion electrodes of the fuel cell and having, in at least one side, a groove for supply of an oxidizing agent or a fuel gas, which separator is made of a carbon composite material comprising (a) 100 parts by weight of an expanded graphite powder and (b) 10-45 parts by weight of a thermosetting resin dispersed in the expanded graphite powder (a), wherein the expanded graphite powder has an average particle diameter of 5-12 μm and at least 80% of the total particles of the expanded graphite powder have particle diameters of 0.1-20 μm . The separator for polymer electrolyte fuel cells according to the present invention is lightweight, can be grooved precisely and easily, and has a high gas barrier property, strength and electro-conductivity.

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With respect to claim 3:

It is disclosed that the separator made of a carbon composite material comprises a) 100 parts by weight of graphite powder; b) 10-45 parts by weight of a thermosetting resin; wherein the graphite powder has an average particle diameter of 5-12 μm (ABSTRACT).

With respect to claim 4:

It is noted that the language “up to 500 parts by weight of a fibrous base” does include a content of fibrous base of from 0 to 500 parts by weight.

With respect to claim 5:

It is disclosed that the separator has, in at least one side, a groove for supply of an oxidizing or a fuel gas (ABSTRACT/COL 5, lines 56-65). *As to the method limitation, i.e. “the specific cut, water and heating treatment”, it is noted that a method limitation incorporated into a product claim does not patentably distinguish the product because what is given patentably consideration is the product itself and not the manner in which the product was made. Therefore, the patentability of a product is independent of how it was made. The specific electrical conductivity is an inherent property as products of identical chemical composition can not have mutually exclusive properties, and thus, the such claimed property, is necessarily present in the prior art material.*

With respect to claim 6:

TABLE 1 shows specific examples of composites for a fuel cell separator wherein the gas permeability is below 50 $\text{ml/m}^2\text{-day-atm}$; and wherein the specific resistance is below 50 $\text{m}\Omega\text{-cm}$ (TABLE 1/ COL 5-6 lines 25-50).

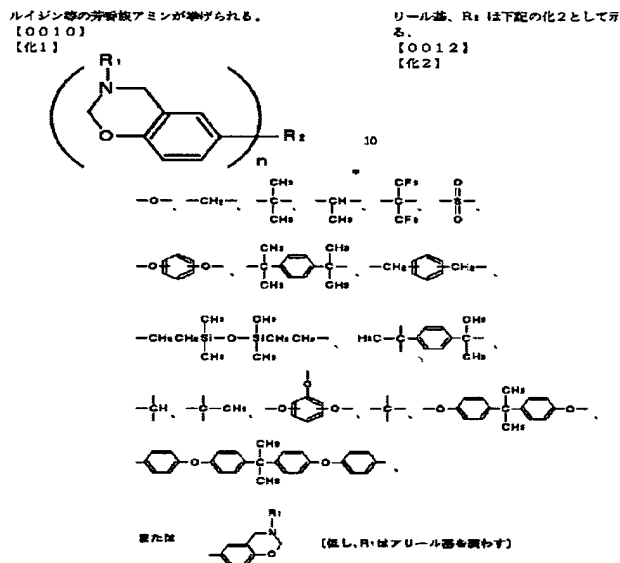
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Saito et al disclose a fuel cell separator according to the above-identified aspects.

However, Saito et al do not disclose the binder comprising the specific polyoxazine compound.

As to claims 1-2:

The JP'009 publication teaches the use of a thermosetting resin composition comprising a polyvalent oxazine compound having a plurality of oxazine rings in the molecule (ABSTRACT/SECTION 0001) wherein the content of the polyoxazine compound is from 0.1-5 parts by weight (SECTIONS 0010-0013).



As for claims 5-6:

The specific electrical conductivity, resistivity and gas transmission rate are inherent properties or characteristics as products of identical chemical composition can not have mutually exclusive properties, and thus, the such claimed property, is necessarily present in the prior art material.

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to use the binder comprising the specific polyoxazine compound of the

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JP'009 publication to make the fuel cell separator composition of Saito et al as the JP'009 publication teaches that by using such specific polyoxazine compound, a resin composition giving moldings on a reduced level of defectiveness by lowering the volatiles formed in thermally curing a compound is obtained. In addition, a thermosetting resin having a satisfactory degree of mechanical properties, electrical properties and flame retardant is obtained. As to the specific content of the polyoxazine compound, it would be obvious to make the specific composition as Saito et al's disclosure directly teaches the use of the polyoxazine compound with the claimed range so as to obtain the above-discussed mechanical properties, electrical properties and flame retardant.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (703) 306-3326. The examiner can normally be reached on Monday-Thursday (8:30 am - 7:00 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (703) 308-2383. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Raymond Alejandro
Examiner
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